*névé* into ice). He considers the cause of the increase to lie in the *overcrystallizing* (Uebercrystallisiren) of one grain at the expense of its neighbor. The known fact that the melting temperature of ice is lowered by excessive pressure and raised by extension, accounts for the plasticity of a crystalline mass; water produced by fusion at points where the pressure is greater is transported and frozen at points of less pressure. It is further supposed that the crystals of ice present differences of compressibility in their different axes; hence crystals differently directed will have unequal power of raising or lowering the temperature of fusion under pressure, and some will tend to grow at the expense of others less favorably directed.—*English Mechanic.*

GEOLOGICAL NEWS.—Professor Zittel in the *Palæontographica* for 1882, describes and figures a number of species of the order Pterosauria from the Solenhofen slate of Bavaria. He corrects and increases our knowledge of the species *Pterodactylus elegans*, *Kochi* and *brevirostris*, and of the species of Rhamphorhynchus. He distinguishes three of the latter, *R. longicaudus*, *R. gemmingi*, and *R. muensteri* (= *R. phyllurus* Marsh).

## BOTANY.[1]

NEW SPECIES OF NORTH AMERICAN FUNGI.—*Mitrula luteola.*—1½–3 centimetres high; head mostly compressed, ½–¾ of a centimetre wide, subplicate, light yellow; stipe shorter than the head, paler and tomentose, often slightly hollow; asci narrow, attenuated below, 90–100 × 5–6 μ. paraphyses none; sporidia uniseriate, elliptical, or often slightly bulging on one side, faintly 1–2 nucleate, yellow, when discharged on paper: 6–7 × 2½–3 2μ Solitary or subcespitose. On the ground among fallen pine leaves in sandy pine woods. Newfield, N. J., Oct., 1882.

*Peziza* (*Mollisia*) *incrustata.*—Gregarious and often sub-confluent, sessile or contracted below into a very short stipe; disk immarginate convex, scarcely becoming concave, when dry, honey color, pruinose, appearing as if covered with fine crystals of sugar, about $\frac{1}{6}$ mm. in diameter; asci clavate contracted below into a slender base, 30×3½–4μ. paraphyses filiform, simple or branched, sporidia partly biseriate, ovate-oblong, simple, hyaline, 5–6 × 1 μ. On some old resupinate Polyporus, on the under side of a trunk of *Juniperus virginiana* lying on the ground. Newfield, N. J., June, 1882.

*Dermatea juniperina.*—Erumpent sessile, orbicular, sooty black, disk slightly paler when moist, margin obsolete, about $\frac{1}{4}$ mm across, contracted below when dry, so as to appear substipitate; asci clavate, cylindrical, 100–114 × 15–18 μ.; paraphyses filiform, scarcely thickened above; sporidia subbiseriate, elliptical, nearly hyaline, with a large central nucleus, 18–20 × 7–12 μ. On dead

[1]Edited by PROF. C. E. BESSEY, Ames, Iowa.

or dying leaves of *Juniperus communis*. Decorah, Iowa, May, 1882. E. W Holway.

*Bulgaria Ophiobolus*.—Cespitose, obconic, subinfundibuliform, ½–¾ of a centimeter high and broad, composed of two layers, separated by a gelatinous stratum, pruinose and dark olivaceous outside, disk nearly black, margin obtuse, entire; asci cylindrical, 150 × 10–12 μ. paraphyses filiform; sporidia vermiform-cylindrical, multinucleate, curved or bent, rather narrower at one end, 40–75 × 34 μ. When dry, scarcely distinguishable, externally from *B. inquinans* Fr. On a decaying log. Decorah, Iowa, Sept., 1882. E. W. Holway, No. 280.

*Tympanis bicolor*.—Cespitose or single, sessile, narrow subundulate margin and outside pale rufous, disk black, nearly plain, ¾–1 mm in diameter; asci subcylindrical, 75 × 8–9 μ.; paraphyses, stout, not distinctly enlarged above; sporidia, mostly uniseriate, oblong-elliptical, often narrower at one end, 2–4 nucleate, yellowish, 13–15 × 3½–4 μ. Nearly allied to *T. acerina*, Pk. On dead limbs of (maple?) Decorah, Iowa, Aug., 1882. E. W. Holway, No. 220.

*Hysterium sphaeriaceum*.—Erumpent minute, ¼–⅓ mm long, by ⅔–¾ as wide, densely gregarious, black and nearly smooth, but not polished, opening narrow, lips not prominent; asci subcylindrical, nearly sessile, 55 × 7; paraphyses obscure; sporidia biseriate fusiform, hyaline and nucleate, becoming yellowish and 3 septate, and often slightly constricted at the septa, 12–20×3–3½ μ. The perithecia are mostly sparingly clothed with pale, short, weak, sub-glandular hairs. Much resembles *Glonium parvulum* Ger, but the fruit is very different. On decaying wood. Decorah, Iowa, Aug. 23, 1882. E. W. Holway, No. 223.

*Hypoxylon Holwayii*.—Stroma ¼–½ centimeter in diameter, rather thin, orbicular, black within, surface covered with a white pruinose coat, except the projecting, acutely papillose, black ostiola; perithecia, in a single layer, 20–30 in each stroma; asci cylindrical; sporidia uniseriate, oblong, brown, 1–2 nucleate, 22–27 × 11 μ., resembling the spores of a Sphaeropsis. Surrounding the stromata and standing out obliquely like a coarse fringe, are short coarse black bristle-like teeth, like the teeth of a Hydnum or Irpex. This curious growth also arises from the surface of the inner bark, for some distance around the stromata, soon throwing off the epidermis, and leaving the blackened surface of the inner bark exposed. This growth is analogous to that of *Institale acariforme* Fr., in connection with *Hypoxylon coccineum*. On dead trunks or limbs of Populus. Decorah, Iowa, July 1882. E. W. Holway, No. 145.

*Hypoxylon piceum*.—Stroma effused, sub-elliptical, or elongated, often by confluence, forming patches 4–8 centimeters long, by half as wide, dark brown, nearly black within, surface wrinkled, and covered with the dull yellow conidial growth, which also

spreads over the surface of the wood adjacent, and consists of short rudimentary irregularly branched hyphæ, which are thickly covered with the minute, dust-like conidia; perithecia, in two or three layers, densely crowded and angular by compression, the lower layer much elongated, ostiola minute scarcely visible: asci ——? sporidia navicular brown, 11–12 × 4. The stromata resemble blotches of black pitch dusted over with yellow meal, and are of about the consistence of beeswax. On rotten wood. Decorah, Iowa, Oct., 1882. E. W. Holway, No. 287. (Allied to *Hypoxylon crocatum* Mont.)

*Nectria lasioderma.*—Perithecia mostly single, subamorphous, obtuse-conic, broadly perforated above, ¼mm high, shagged with short, septate, obtuse, imperfectly developed hairs, dull red when dry, pale orange when moist; asci cylindrical, 75–80 × 7½; sporidia uniseriate, elliptical hyaline, uniseptate, scarcely constricted, 11–12 × 4–5 μ. Parasitic on old *Valsa lutescens* Ell. On dead limbs of *Quercus coccinea* lying on the ground. Newfield, N. J., June, 1882. On account of its small size and dull color easily overlooked.

*Nectria Rexiana.*—Perithecia minute, not over ¼mm in diam, flesh color, becoming black, slightly compressed laterally. Solitary or 2–3 together, enveloped in white down which forms little tufts, appearing under the lens like some minute, tufted mucedinous growth; asci linear, 35–40 μ. long, evanescent; sporidia uniseriate, oblong, hyaline, 1–2 nucleate (becoming uniseptate)? 5–6 × 1½–2 μ. Parasitic on *Chondrioderma spumarioides.* Adirondack mountains, N. Y., Aug. 1882. Dr. Geo. A. Rex.

*Nectria truncata.*—Perithecia gregarious, minute, $\frac{1}{10}$ – $\frac{1mm}{8}$ in diameter; flesh color, subglobose, the apex flattened into a circular, granular roughened disk with the edge slightly projecting; ostiolum in the centre of the disk, minute, papilliform, brown; asci sublanceolate, 35 × 5; sporidia biseriate, oblong-fusiform, sub-hyaline, slightly constricted across the middle and uniseptate, 11–13 × 2½ – 3μ. Under the pocket lens resembles *Illosporium pallidum* Cke.

*Melanconis apocrypta.*—Perithecia subcircinate ($\frac{1mm}{3}$) membranaceous, 8–12, buried in the inner bark without any distinct stroma, entirely concealed by the epidermis, which, without being ruptured, is raised into slight, whitish pustules by the pressure of the short fasciculate ostiola; sporidia 25–30 × 11–13μ, at first surrounded with a hyaline, gelatinous envelope, and more or less perfectly biseriate in asci 114 × 22μ, but at length becoming brown, uniseptate and uniseriate in elongated asci 120–150 × 12μ. On dead poplar branches. Decorah, Iowa, July, 1882. E. W. Holway, No. 164. The conidial stage is probably *Melanconium populinum* Pk. This is closely allied to *M. occulta* (Fckl.) Sacc., but differs in its narrower asci and smaller brown sporidia without appendages.

*Melanconis (Melanconiella) Decoraensis.*—Perithecias ubglobose, coriaceous, ½mm diam. 8–12 circinating in a cortical stroma covered by the thick epidermis; ostiola scarcely prominent, united in an elliptical, erumpent, dirty gray disk; asci cylindrical, briefly stipitate, spore-bearing part 95–115 × 8–11μ; sporidia uniseriate, elliptical, and obtuse olivaceous, uniseptate, 15–20 × 8–10μ. The accompanying Melanconium mostly in a separate stroma with abundant pip-shaped olive black spores of about the same size as the ascospores On dead limbs of birch. Decorah. Iowa, Aug., 1882. E. W. Holway.

*Cryptosporella lentaginis* Rehm (in literis.)—Perithecia globose, ½mm diam. membranaceous, mostly 3–4 together in a cortical stroma, their bases sunk into the subjacent wood; ostiola short, barely piercing the epidermis, which is raised into numerous little tuberculiform pustules; asci clavate-cylindrical, 45 × 7–8μ; sporidia biseriate, cylindrical, hyaline, straight or slightly curved, 11–12 × 2–2½μ, with 2 or 3 minute nuclei. The substance of the bark is blackened by the mycelium. On dead *Viburnum lentago.* Decorah, Iowa, June, 1882. E. W. Holway, No. 119, partly.

*Diatrype tiliacea.*—Perithecia subelongated (½ × ⅓mm) buried in the scarcely altered substance of the inner bark, in clusters of 5–10 or more, their rough, conic or cylindric-conic ostiola bursting through the epidermis in compact clusters, but scarcely united in a disk; asci broad, oblong, 80–90 × 18–22μ; paraphyses? sporidia in 2 or 3 series or lying obliquely, 8 in an ascus, oblong-cylindrical, slightly curved, obtuse, hyaline, becoming uniseptate, slightly constricted in the middle with a single large nucleus in each cell, 22–30 × 7–8μ. The clusters of perithecia often longitudinally confluent, are surrounded by a faint circumscribing line visible only near the surface. The ostiola (½–1mm long), are at length ruptured at their tips with a broad, irregular opening. The ascigerous nucleus is white. On bark of dead *Tilia americana.* Ames, Iowa, Oct. 1882. J. C. Arthur, No. 86.

*Diatrype phæosperma.*—Stroma small (1mm diam.) tuberculiform, closely embraced by the imperfectly laciniate-cleft epidermis; perithecia 6–8, ⅓mm diam. with thick coriaceous walls, lying in a single layer under the white stroma, which is circumscribed by a black line that scarcely penetrates to the wood beneath; asci (spore bearing part) about 55 × 7μ; sporidia imperfectly biseriate, cylindrical, curved, continuous, brown, 10–12 × 3–3½μ, ends obtuse. Ostiola obtuse, black, not prominent, dotting the pale brown or wood-colored disk. On dead limbs. Decorah, Iowa, Aug. 1882. E. W. Holway, No. 228.

*Diatrype radiata.*—Perithecia membranaceous, 8–15, bedded in a light-colored tuberculiform stroma, which splits the epidermis in a laciniate manner, and is circumscribed by a black line, which does not, however, penetrate to the wood; ostiola obtuse, scarcely prominent; asci clavate, 75–80 × 6μ; sporidia cylindrical, yel-

lowish, curved, continuous, 9–12 × 2μ. The perithecia have thick walls, which are pale olivaceous at first, and at length black. On dead elm branches. Decorah, Iowa, Sept., 1882. E. W. Holway, No. 266.—*J. B. Ellis, Newfield, N. J.*

## ENTOMOLOGY.[1]

MISTAKEN INSTINCT IN A BUTTERFLY.—I believe I have an instance in illustration of your remark in the NATURALIST for July, 1882, that "the sense of sight, touch and taste play a more important part in insect economy than the sense of smell."

In June I observed that a plant of *Artemisia ludoviciana* in our garden was covered with the hollow, spherical, leafy retreats of the larvæ of *Pyrameis huntera.* Never before having found this caterpillar on any plant except Antennaria, I thought that the very different qualities of the new food might possibly produce some variation in the butterfly, and so transferred a dozen or more of the skeletonized coverts to the rearing cage.

In so doing, I noticed that the larvæ seemed very small in proportion to the quantity of foliage gnawed. In the cage, although constantly supplied with fresh food and light and air, they did not thrive, and lingered along from day to day without any perceptible growth. Nor did those left on the plant in the garden develop much more satisfactorily, and one after another disappeared long before attaining full size. Of those in confinement but two succeeded in passing the third molt, and all died in about two weeks, from lingering starvation, except a couple that I transferred to Antennaria, which began at once to feed with avidity and soon completed their transformations.

As a rule, we can depend upon the botanical determinations of insects. I have repeatedly had the species of a plant, about which I was in doubt, decided for me by the peculiar gall or mine, which it bore, and which I knew to occur only on a certain species. In this case, however, the instinct of the parent butterfly was evidently at fault.

Antennaria being rather rare in this immediate locality, she was misled by the surface resemblance of the white, cottony leaves of the Artemisia to those of the accustomed food-plant of her young, and under this misapprehension deposited her eggs in utter disregard of the somewhat pungent odor, which a keen sense of smell would have perceived.

The young, upon hatching, attempted to feed, but found in the dry, bitter leaves of the Artemisia no adequate substitute for the bland, mucilaginous Antennaria, and, although they did not immediately die from its effects, were unable long to resist them.—*Mary E. Murtfeldt, Kirkwood, Mo.*

[1] This department is edited by Professor C. V. RILEY, Washington, D. C., to whom communications, books for notice, etc., should be sent.